ARIEL DEVELOPMENT, INC.

ACCIDENT PREVENTION PROGRAM

for the

Rainier Brewery Demolition Project

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GENERAL INSTRUCTIONS

OVERVIEW

Industrial injuries create a no-win situation for everyone involved. Employees experience pain, suffering and incapacitation while the company suffers from the loss of the injured person's contributions. This document is designed to assist all ARIEL Development, Inc. personnel in assuring that such an undesirable situation will not develop in this company. It provides information and guidance for the establishment and maintenance of an injury-free work environment.

1. **Procedures**

   This document contains guidance for safety procedures to be followed and forms to be used. Supervisors are expected to integrate the procedures into the appropriate work activity and employees are expected to apply them on the job. The sample forms are to be used if they apply to the job concerned.

2. **Dissemination**

   A copy of this statement will be issued to all supervisory and management personnel. A copy of the policy statement will be posted on company safety and health bulletin boards.

3. **Regulations**

   A copy of the following documents will be maintained on each job site:

   1. Chapter 155, Construction Safety Standards from the Division of Industrial Safety and Health, Washington State Department of Labor and Industries.
   2. Our customized copy of this Accident Prevention Program sample outline.
   3. The WISHA Poster, form F416-081-000, which tells employees and employers their rights under the Washington Industrial Safety and Health Act.

COMPANY POLICY LETTER

SAFETY AND HEALTH POLICY FOR _ARIEL DEVELOPMENT, INC.

The purpose of this policy is to develop a high standard of safety throughout all operations of ARIEL Development, Inc. and to ensure that no employee is required to work under any conditions, which are hazardous or unsanitary.

We believe that each employee has the right to derive personal satisfaction from his/her job and the prevention of occupational injury or illness is of such consequence to this belief that it will be given top priority at all times.

It is our to initiate and maintain complete accident prevention and safety training programs. Each individual from top management to the working person is responsible for the safety and health of those persons in their charge and coworkers around them. By accepting mutual responsibility to operate safely, we will all contribute to the well being of our employees.

Signed, , Pres/CEO

RESPONSIBILITIES

Responsibilities for Safety and Health include the establishment and maintenance of an effective communication system among workers, supervisors and management personnel. To this end, all persons are responsible to assure that their messages are received and understood by the intended receiver. Specific safety and health responsibilities for company personnel are as follows:

1. MANAGEMENT OFFICIALS

Active participation in and support of safety and health programs is essential. Management officials will display their interest in safety and health matters at every opportunity. At least one manager (as designated) will participate in the safety and health committee meetings, incident investigations and inspections. Each manager will establish realistic goals for implementing instructions for meeting the goals. Goals and implementing instructions shall be within the framework established by this document. Incentives will be included as part of the instructions.

2. SUPERVISORS

The safety and health of the employees they supervise is a primary responsibility of the supervisors. To accomplish this obligation, supervisors will:

1. Assure that all safety and health rules, regulations, policies and procedures are understood and observed.
2. Require the proper care and use of all required personal protective equipment.
3. Identify and eliminate job hazards quickly through job safety analysis procedures. (See the sample Job Safety Analysis form attached to this document.)
4. Inform and train employees on the hazardous chemicals and/or procedures they MAY encounter under normal working conditions or during an emergency situation. (See the sample hazard communication program.)
5. Receive and take initial action on employee suggestions, awards or disciplinary measures.
6. Conduct crew/leader meetings the first five minutes of each work shift to discuss safety and health matters and work plans for the workday.
7. Conduct walk-around safety inspections at the beginning of each job, during each day and at least weekly thereafter.
8. Train employees (new and experienced) in the safe and efficient methods of accomplishing each job or task as necessary.
9. Review injury trends and establish prevention measures.
10. Attend safety meetings and actively participate in the proceedings.
11. Participate in incident investigations and inspections.
12. Promote employee participation in the safety and health program.
13. Actively follow the progress of injured workers and display an interest in their rapid recovery and return to work.
14. Maintain Form 300 Accident Report.
15. Provide accident reports and related information for incorporation into employee records.

3. EMPLOYEES

All ARIEL Development, Inc. employees shall observe the items of responsibility established in this document as well as job safety rules which may apply to specific task assignments.

SAFETY VIOLATION DISCIPLINARY POLICY

Ariel Development, Inc. believes that a safety and health Accident Prevention Program is unenforceable without some type of disciplinary policy. Our company believes that in order to maintain a safe and healthful workplace, the employees must be cognizant and aware of all company, State, and Federal safety and health regulations as they apply to the specific job duties required. The following disciplinary policy is in effect and will be applied to all safety and health violations.

1. The following steps will be followed unless the seriousness of the violation would dictate going directly to Step 2 or Step 3.

    a. A first time violation will be discussed orally between company supervision and the employee. This will be done as soon as possible.
    b. A second time offense will be followed up in written form and a copy of this written documentation will be entered into the employee's personnel folder.
    c. A third time violation will result in time off or possible termination, depending on the seriousness of the violation.

2. The following activities, but not limited to, are subject to disciplinary action:
    a. Insubordination,
    b. Failure to follow orders,
    c. Failure to work safely and/or use safety equipment,
    d. Habitual tardiness,
    e. Unexcused absences,
    f. Reporting to work under the influenced of alcohol and/or drugs,
    g. Horseplay,
    h. Theft of Clients or employer's equipment, supplies and materials,
    i. Fighting on the work site,
    j. Sexual harassment,
    k. Racial discrimination,
    l. Failure to wear assigned respiratory protection,

PROCEDURE FOR INJURY OR ILLNESS ON THE JOB

1. OWNER, OWNER'S REPRESENTATIVE AND/OR SUPERVISOR IMMEDIATELY TAKES CHARGE

a. A First Aid trained (current card) individual shall supervise and administer first aid as appropriate to the situation. (Good Samaritan Law applies).

b. The responsible individual will designate someone or will make a phone call for emergency service.

c. The First Responder or the responsible individual will make arrangements for transportation (ambulance, helicopter, company vehicle, etc.), depending on the seriousness of the injury. Protect the injured person from further injury.

d. Notify owner or top management, if not already present.

e. Do not move anything unless necessary, pending investigation of the incident.

f. Accompany or assign a responsible individual to take injured person(s) to doctor, hospital, home etc. (depending on the extent of injuries).

g. Accompany or assign a responsible individual to take the injured person to their family doctor, if available.

h. Remain with the injured person until relieved by other authorized persons (manager, EMT, doctor, etc.).

i. When the injured person's immediately family is known, the owner or supervisor should properly notify family members, preferable in person, or have an appropriate person do so.

2. DOCUMENTATION

1. Minor injuries – requiring doctor or outpatient care: After the emergency actions following an injury, an investigation of the incident will be conducted by the immediate supervisor and any witness to determine the causes. The findings must be documented on our investigation form.
2. Major injuries – fatality or multiple hospitalizations: Top management must see that the Department of Labor and Industries is notified as soon as possible, but at least within 8 hours of the incident. Call or contact in person the nearest office of the Department or call the OSHA toll free central number (1-800-321-6742). Top management will then assist the Department in the investigation.
3. The findings must be documented on our incident investigation report form and recorded on the OSHA 300 log, if applicable. (Sample incident investigation report form included in this document.)

3. NEAR MISSES

1. All near-miss incidents (close calls) must be investigated.
2. Document the finding on the company incident investigation report form.
3. Review the findings at the next safety meetings or sooner if the situation warrants.

Sample forms for Incident investigation and Employee's Report of Injury are available in the Appendix.

BASIC RULES FOR INCIDENT INVESTIGATION

1. The purpose of an investigation is to find the cause of an incident and prevent future occurrences, not to fix blame. An unbiased approach is necessary to obtain objective findings.
2. Visit the incident scene as soon as possible – while facts are fresh and before witnesses forget important details.
3. If possible, interview the injured worker at the scene of the incident and "walk" him or her through a re-enactment. Be careful not to actually repeat the act that caused the injury.
4. All interviews should be conducted as privately as possible. Interview witnesses one at a time. Talk with anyone who has knowledge of the incident, even if they did not actually witness the mishap.
5. Consider taking the signed statements in cases where facts are unclear or there is an element of controversy.
6. Graphically document details of the incident: area, tools, and equipment. Use sketches, diagrams, and photos as needed, and take measurements when appropriate.
7. Focus on causes and hazards. Develop an analysis of what happened, how it happened, and how it could have been prevented. Determine what caused the incident itself (unsafe equipment/condition, unsafe act, etc), not just the injury.
8. How will you prevent such incidents in the future? Every investigation should include an action plan.
9. If a third party or defective product contributed to the incident, save any evidence. It could be critical to the recovery of the claim costs.

FIRST AID TRAINING, KITS, AND POSTER

1. The ARIEL Development, Inc. project supervisor will ensure that a certified first aid trained person will be on site during all work related activities.
2. To meet the above objectives, the following procedures will be followed:
   a. All supervisors or persons in charge of crews will be first aid trained unless their duties require them to be away from the jobsite. If so, other persons who are certified in first aid will be designated as the recognized first aider.
   b. Other persons will be trained in order to augment or surpass the standard requirements.
   c. Valid first aid cards are recognized as ones that include both first aid and cardiopulmonary resuscitation (CPR) and have not reached the expiration date.
3. First aid training, kits, and procedures will be in accordance with the requirements of the general safety and health standards (WAC 296-800).

a. First aid kit locations at this jobsite include burning area and the project office.

b. The project supervisor is designated to ensure that the first aid kits are properly maintained and stocked.

4. Posters listing emergency numbers, procedures, etc., will be strategically located, such as on the first aid kit, at telephones, and in other areas where employees have easy access.

EXPOSURE TO BLOOD a Good Samaritan basis.

1. If first aid trained personnel are involved in a situation involving blood, they should:
   a. Avoid skin contact with blood/other potentially infectious materials by letting the victim help as much as possible, and by using gloves provided in the first aid kit.
   b. Remove clothing, etc. with blood on it after rendering help.
   Wash thoroughly with soap and water to remove blood. A 10% chlorine bleach solution is good for disinfecting areas contaminated with blood (spills, etc.).
   c. Report such first aid incidents within the shift to supervisors (time, date, blood presence, exposure, names of others helping).
2. Hepatitis B vaccinations will be provided as soon as possible but not later than 24 hours after the first aid incident.

DOCUMENTATION

1. All safety related incidents that result in the need for on-site or of site medical attention shall be documented.
2. Lost time accidents shall be logged on the '300'Reportabe Accident Form.
3. All safety related accidents that result in a work site shut down of more than ten (10) minutes shall be documented.
4. Accident reporting forms are available in the Appendix.

CREW LEADER MEETINGS

1. We believe that hard work and perseverance are required for the prevention of injuries and illnesses, with the crew leader being the key to a successful result.
2. Purpose: To assist in the detection and elimination of unsafe conditions and work procedures.
3. Procedures: The following guidelines will be followed:
   a. These meetings are held at the beginning of each job and at least weekly thereafter, according to the various circumstances involved or when necessary to clear working procedures. No set pattern will suit all cases.
   b. It is important that the crew leader talk daily on injury prevention and immediately upon witnessing an unsafe act.
5. Safety meeting suggested topics:
   a. Fall protection/fall prevention
   b. Personal protective equipment
      1. Hard hats
      2. Eye protection
      3. Hearing protection
      4. Footwear
      5. Safety harness/belts
      6. Respiratory protection
   c. Housekeeping
   d. Tool inspection
   e. Emergency procedures
   f. Electrical safety
   g. Ladder safety

h. Scaffold safety
i. Fire prevention/fire extinguishers
j. Reporting injuries and unsafe conditions
k. Confined spaces
l. Lock-out procedures

6. Attendance at safety meetings pre- work daily meetings is mandatory.
   a. Individuals who refuse to participate in, or miss more that three (3) safety meetings are subject to discipline, including time off without pay to termination of employment.
   b. For employees who miss a safety meeting, it is the employee's immediate supervisor decision to update the individual of the contents of the missed meeting.
7. All persons attending a safety meeting shall sign their names in the space provided on the Sign In sheet.
8. The original copy of the safety minutes with attendee signatures shall be incorporated into the project records.
9. Copies of the minutes will be made in response to an employee request or his/her authorized representative.
4. Scope of Activities:
   a. Conduct in-house safety inspections with supervisor concerned.
   b. Investigate incidents to uncover trends.
   c. Review incident reports to determine means or elimination.
   d. Accept and evaluate employee suggestions.
   e. Review job procedures and recommend improvements (Job Safety Analysis Form is available in the Appendix)
   f. Monitor the safety program effectiveness.
   m. Promote and publicize safety.

Construction Safety Meeting Suggestions

(The crew leader's guide)

Twelve good topics for construction safety meetings:

n. Fall protection/fall prevention

o. Personal protective equipment
   a. Hard hats
   b. Eye protection
   c. Hearing protection
   d. Footwear
   e. Safety harness/belts
   f. Respiratory protection

p. Housekeeping

q. Tool inspection

r. Emergency procedures

s. Electrical safety

t. Ladder safety

u. Scaffold safety

v. Fire prevention/fire extinguishers

w. Reporting injuries and unsafe conditions

x. Confined spaces

y. Lock-out procedures

How to hold a *good* safety meeting

1. Be certain everyone knows the time and place of the next meeting. You may use the sample form on the next page if you wish.

2. Insist that everyone attend. Before the next meeting, remind those who were late or failed to attend that **attendance is not optional**.

3. Pick an appropriate topic. If you can't think of an appropriate topic, use one from the attached list (these usually apply to all projects).

4. Start the meeting on time.

5. Don't waste time – give the meeting your undivided attention.

6. Discuss the topic you have chosen and prepared. Don't wait until the meeting to choose your topic.

7. Use handouts or posters to illustrate your topic.

8. Discuss current job site safety events, injuries and close calls.

9. Encourage employees to discuss safety problems as they arise. Do not save safety concerns for the meeting. Allow some time for employee questions or input at the end of the meeting.

10. Invite managers or owners to speak. Ask fellow employees to speak on a safety topic.

11. If you prevented *one* injury, it is time well spent. Your topic may be one that some employees have heard many times, but there may be one person who is new or has never been told of the safety requirement for that topic. Repeating topics several times during the course of a project is beneficial as long as it applies to the work being done.

12. Follow up on employee concerns or questions and get back to them with the answer before the next meeting.

13. Be certain to document the attendance and the topics discussed.

WALK-AROUND SAFETY INSPECTIONS

Walk-around safety inspections will be conducted at the beginning of each job, and at least weekly thereafter.

- The inspections will be conducted jointly by one member of management and one employee, elected by the employees, as their authorized representative.

- The inspections will be documented and the documentation will be made available for inspection by representatives of the Department of Labor and Industries.

- The records of the walk-around inspections will be maintained until the completion of the job.

General Safety Rules for Construction

1. Always store materials in a safe manner. Tie down or support piles if necessary to prevent falling, rolling, or shifting.

2. Shavings, dust scraps, oil or grease should not be allowed to accumulate. Good housekeeping is a part of the job.

3. Trash piles must be removed as soon as possible. Trash is a safety and fire hazard.

4. Remove or bend over the nails in lumber that has been used or removed from a structure.

5. Immediately remove all loose materials from stairs, walkways, ramps, platforms, etc.

6. Do not block aisles, traffic lanes, fire exits, gangways, or stairs.

7. Avoid shortcuts – use ramps, stairs, walkways, ladders, etc.

8. Standard guardrails must be erected around all floor openings and excavations must be barricaded. Contact your supervisor for the correct specifications.

9. Do not remove, deface or destroy any warning, danger sign, or barricade, or interfere with any form of protective device or practice provided for your use or that is being used by other workers.

10. Get help with heavy or bulky materials to avoid injury to yourself or damage to material.

11. Keep all tools away from the edges of scaffolding, platforms, shaft openings, etc.

12. Do not use tools with split, broken, or loose handles, or burred or mushroomed heads. Keep cutting tools sharp and carry all tools in a container.

13. Know the correct use of hand and power tools. Use the right tool for the job.

14. Know the location and use of fire extinguishing equipment and the procedure for sounding a fire alarm.

15. Flammable liquids shall be used only in small amounts at the job location and in approved safety cans.

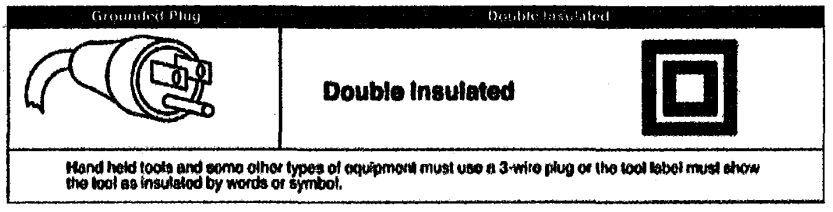
16. Proper guards or shields must be installed on all power tools before use. Do not use any tools without the guards in their proper working condition. No "homemade" handles or extensions (cheaters) will be used!

17. All electrical power tools (unless double insulated), extension cords, and equipment must be properly grounded.

18. All electrical power tools and extension cords must be properly insulated. Damaged cords must be replaced.

19. Do not operate any power tool or equipment unless you are trained in its operation and authorized by your firm to do so.

20. All electrical power equipment and tools must be grounded or double insulated.



21. Use tools only for their designed purpose.

Ladder Safety Rules

General:

- Inspect before use for physical defects.
- Ladders are not to be painted except for numbering purposes.
- Do not use ladders for skids, braces, workbenches, or any purpose other than climbing.
- When you are ascending or descending a ladder, do not carry objects that will prevent you from grasping the ladder with both hands.
- Always face the ladder when ascending and descending.
- If you must place a ladder over a doorway, barricade the door to prevent its use and post a warning sign.
- Only one person is allowed on a ladder at a time.
- Do not jump from a ladder when descending.
- All joints between steps, rungs, and side rails must be tight.
- Safety feet must be in good working order and in place.
- Rungs must be free of grease and/or oil.

Stepladders

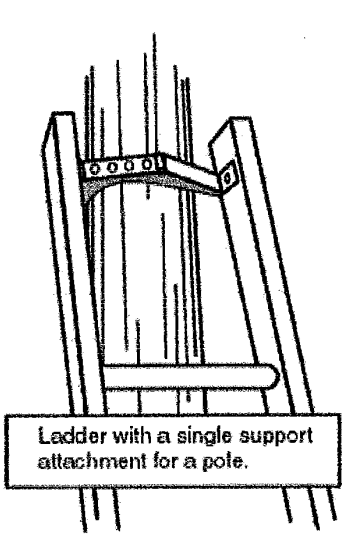
- Do not place tools or materials on the steps or platform of a stepladder
- Do not use the top two steps of a stepladder as a step or stand.
- Always level all four feet and lock spreaders in place.
- Do not use a stepladder as a straight ladder.

Straight type or extension ladders

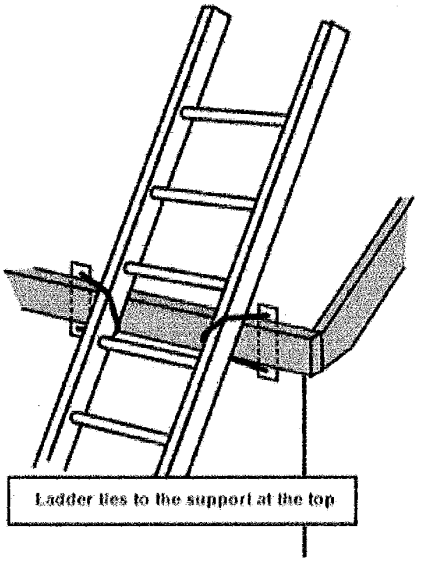
- All straight or extension ladders must extend at least three feet beyond the supporting object when used as an access to an elevated work area.

- After raising the extension portion of a two or more stage ladder to the desired height, check to ensure that the safety dogs or latches are engaged.

- All extension or straight ladders must be secured or tied off at the top.

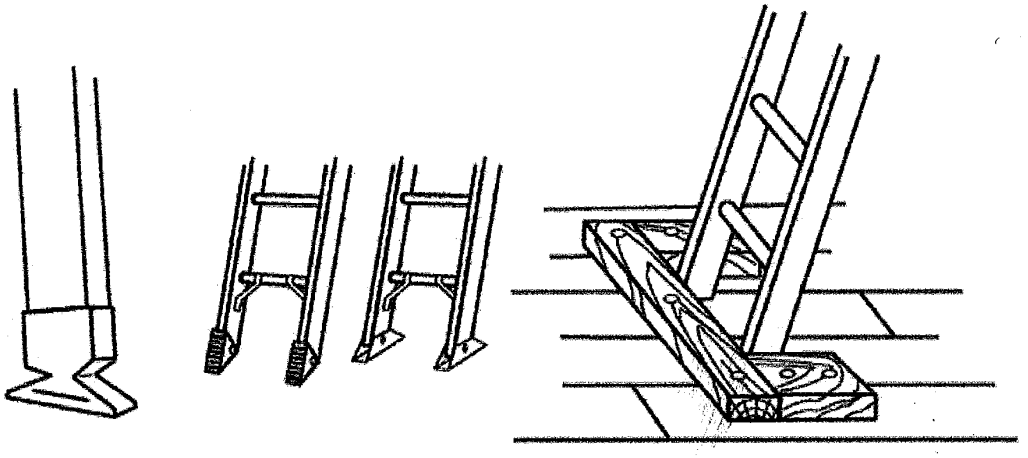


Ladder with a single support attachment for a pole.



Ladder ties to the support at the top

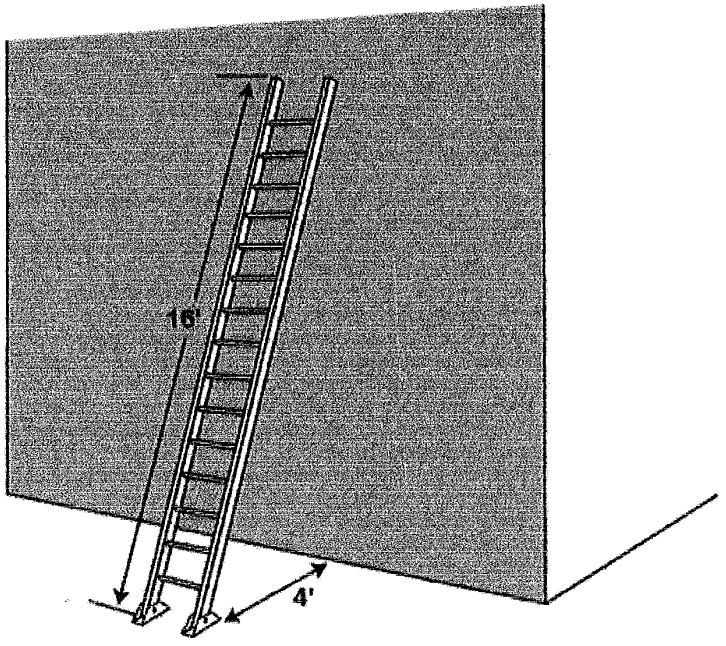
- All ladders must be equipped with safety (non-skid) feet.



Rubber Safety Feet Spikes Cleats Nailed to the Floor

Ladders with supports on the bottom.

- Portable ladders must be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is about one-quarter of the working length of the ladder.



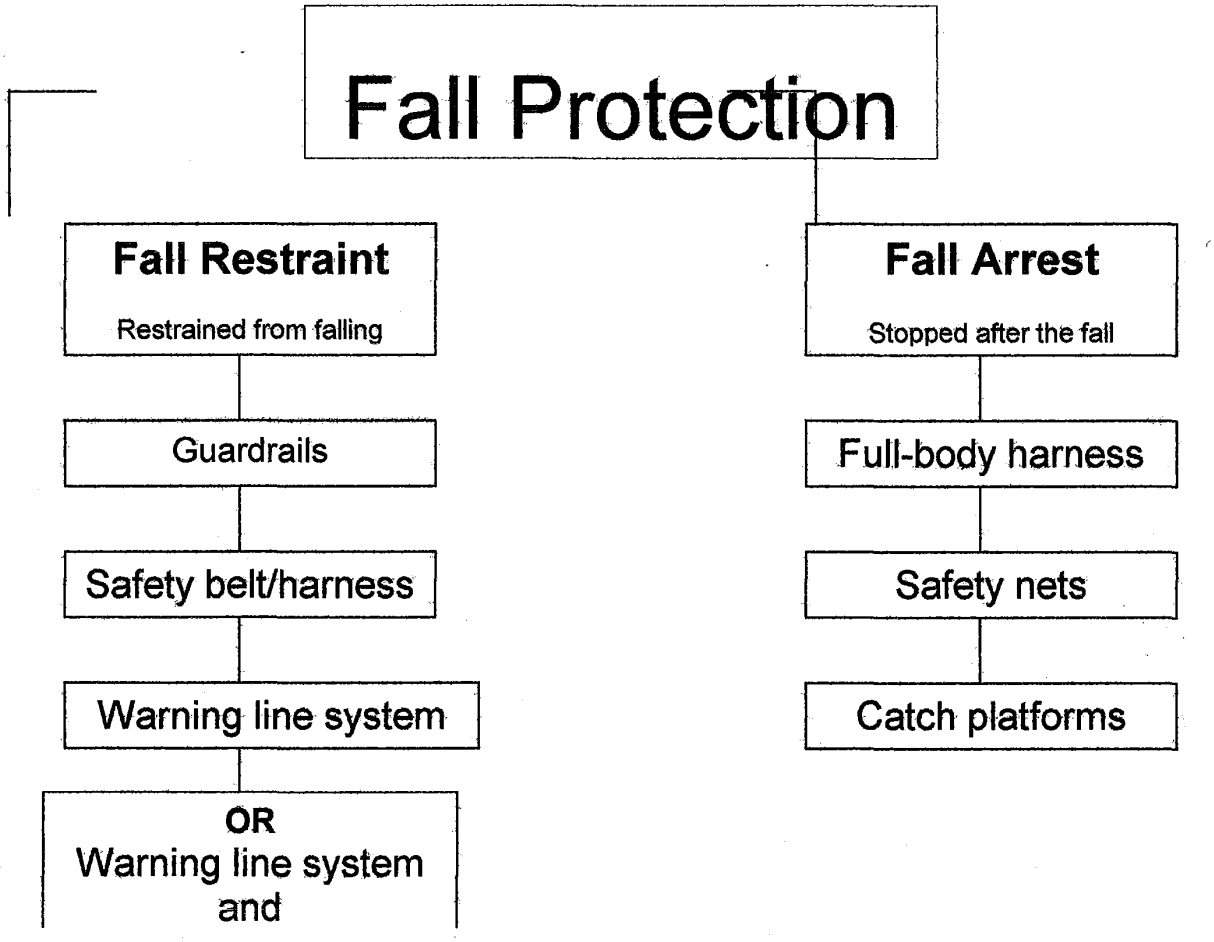
Fall Protection Safety Rules

Falls from elevation are a major cause of injuries and deaths in the construction industry. We at Ariel Development, Inc.are committed to eliminating injuries caused by fall hazards by instituting a program of 100% fall protection for all fall hazards 10 feet or greater.

All work sites with fall hazards of 10 feet or more will have a site-specific fall protection work plan completed before any employees begin work. The employees on that specific job will be trained in the fall hazards and the method used to implement fall protection. The attached training guide will be used to train employees in the inspection and maintenance of their fall protection equipment, as well as fall protection selection criteria. All employees will use fall protection when there is exposure to a fall hazard of 10 feet or more. Employees who fail to follow this policy are subject to disciplinary action, up to and including dismissal.

The evaluation of the jobsite and the completion of the fall protection work plan will be done by a designated "competent person," who has an understanding of WISHA fall protection requirements, the fall protection systems available for use, and has the authority to take corrective action to eliminate employee exposure to fall hazards.

Fall protection will be provided either through the use of a fall arrest system or a fall restraint system as shown below and thoroughly described in the fall protection work plan available on site for review.



FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

Safety Belt, Harness and Lanyard Inspection and Maintenance

I. ANSI Classification:

Class I Body belts – used to restrain a person from falling.

Class II Chest harness – used for restraint purposes (NOT for vertical free fall hazards).

Class III Full body harness – used for fall arrest purposes. Can also be used for fall restraint.

Class IV Suspension/position belt – used to suspend or support the worker. If a fall arrest hazard exists this must be supplemented by use of a safety harness.

II. Inspection Guidelines:

To maintain their service life and high performance, all belts and harnesses must be inspected prior to each use for mildew, wear, damage and other deteriorations. Visual inspection before each use is just common sense. Periodic tests by a trained inspector for wear, damage or corrosion should be part of the safety program. Inspect your equipment daily and replace it if any of the defective conditions in this manual are found.

Belt inspection:

1. Beginning at one end, holding the body side of the belt toward you, grasp the belt with your hands six to eight inches apart. Bend the belt in an inverted "U" . The resulting surface tension makes damaged fibers or cuts easier to see.

2. Follow this procedure the entire length of the belt or harness. Watch for frayed edges, broken fibers, pulled stitches, cuts, or chemical damage.

3. Special attention should be given to the attachment of buckles and Dee Rings to webbing. Note any unusual wear, frayed or cut fibers, or distortion of the buckles or Dees.

4. Inspect for frayed or broken strands. Broken webbing strands generally appear as tufts on the webbing surface. Any broken, cut, or burned stitches will be readily seen.

5. Rivets should be tight and immovable with fingers. Body side rivet base and outside rivet burr should be flat against the material. Bent rivets will fail under stress.

   Especially note condition of Dee Ring rivets and Dee Ring metal wear pads (if any). Discolored, pitted or cracked rivets indicate chemical corrosion.

6. The tongue, or billet, of the belt receives heavy wear from repeated buckling and unbuckling. Inspect for loose, distorted, or broken grommets. Belts using punched holes without grommets should be checked for torn or elongated holes, causing slippage of the buckle tongue.

Safety Belt, Harness and Lanyard Inspection and Maintenance cont'd

7. Tongue Buckle:

   Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Roller should turn freely on frame. Check for distortion or sharp edges.

8. Friction Buckle:

   Inspect the buckle for distortion. The outer bars and center bars must be straight. Pay special attention to corners and attachment to points of the center bar.

9. Sliding Bar Buckle:

   Inspect buckle frame and sliding bar for cracks, distortions, or sharp edges.

   Sliding bar should move freely. Knurled edge will slip if worn smooth. Pay special attention to corners and ends of sliding bar.

Lanyard inspection:

When inspecting lanyards, begin at one end and work to the opposite end. Slowly rotate the lanyard so that the entire circumference is checked. Spliced ends require particular attention. Hardware should be examined under procedures also detailed below, i.e., Snaps, Dee Ring, and Thimbles.

1. Steel

   While rotating the steel lanyard, watch for cuts, frayed areas, or unusual wearing patterns on the wire. Broken strands will separate from the body of the lanyards.

2. Webbing

   While bending webbing over a pipe or mandrel, observe each side of the webbed lanyard. This will reveal any cuts or breaks. Swelling, discolorations, cracks, and charring are obvious signs of chemical or heat damage. Observe closely for any breaks in stitching.

3. Rope

   Rotation of the rope lanyard while inspecting from end to end will bring to light any fuzzy, worn, broken, or cut fibers. Weakened areas from extreme loads will appear as a noticeable change in original diameter. The rope diameter should be uniform throughout, following a short break-in-period.

FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

Fall Protection System Considerations

Below are guidelines for worker protection where fall arrest or fall restraint systems are used. Some of this material may be suitable for adding to the written fall protection work plan specified in WAC 296-155-24505. Also reference WAC 296-24-88050, Appendix C, Personal Fall Arrest System.

1. Selection and use considerations:

   The kind of personal fall arrest system selected should match the particular work situation, and any possible free fall distance should be kept to a minimum. Consideration should be given to the particular work environment. For example, the presence of acids, dirt, moisture, oil, grease, etc., and their effect on the system, should be evaluated. Hot or cold environments may also have an adverse affect on the system. Wire rope should not be used where an electrical hazard is anticipated. As required by the standard, the employer must plan to have means available to promptly rescue an employee should a fall occur, since the suspended employee may not be able to reach a work level independently.

   Where lanyards, connectors, and lifelines are subject to damage by work operations such as welding, chemical cleaning, and sandblasting, the component should be protected, or other securing systems should be used. The employer should fully evaluate the work conditions and environment (including seasonal weather changes) before selecting the appropriate personal fall protection system. Once in use, the system's effectiveness should be monitored. In some cases, a program for cleaning and maintenance of the system may be necessary.

2. Testing considerations:

   Before purchasing or putting into use a personal fall arrest system, an employer should obtain from the supplier information about the system based on its performance during testing so that the employer can know if the system meets this standard. Testing should be done using recognized test methods. WAC 296-24-88050, Appendix C, Part II, contains test methods recognized for evaluating the performance of fall arrest systems. Not all systems may need to be individually tested; the performance of some systems may be based on data and calculations derived from testing of similar systems, provided that enough information is available to demonstrate similarity of function and design.

3. Component compatibility considerations:

   Ideally, a personal fall arrest system is designed, tested, and supplied as a complete system. However, it is common practice for lanyards, connectors, lifelines, deceleration devices, and body harnesses to be interchanged since some components wear out before others. The employer and employee should realize that not all components are interchangeable. For instance, a lanyard should not be connected between a body harness and a deceleration device of the self-retracting type since this can result in additional free fall for which the system was not designed. Any substitution or change to a personal fall arrest system should be fully evaluated or tested by a competent person to determine that it meets the standard, before the modified system is put in use.

FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

Fall Protection System Considerations cont'd

4. Employee training considerations:

Thorough employee training in the selection and use of personal fall arrest systems is imperative. As stated in the standard, before the equipment is used, employees must be trained in the safe use of the system. This should include the following: Application limits; proper anchoring and tie-off techniques; estimation of free fall distance, including determination of deceleration distance, and total fall distance to prevent striking a lower level; methods of use; and inspection and storage of the system. Careless or improper use of the equipment can result in serious injury or death. Employers and employees should become familiar with this material, as well as manufacturer's recommendations, before a system is used. Of uppermost importance is the reduction in strength caused by certain tie-offs (such as using knots, tying around sharp edges, etc.) and maximum permitted free fall distance. Also, to be stressed are the importance of inspections prior to use, the limitations of the equipment, and unique conditions at the worksite which may be important in determining the type of system to use.

5. Instruction considerations:

Employers should obtain comprehensive instructions from the supplier as to the system's proper use and application, including, where applicable:

a. The force measured during the sample force test;
b. The maximum elongation measured for lanyards during the force test;
c. The deceleration distance measured for deceleration devices during the force test;
d. Caution statements on critical use limitations;
e. Application limits;
f. Proper hook-up, anchoring and tie-off techniques, including the proper dee-ring or other attachment point to use on the body harness for fall arrest;
g. Proper climbing techniques;
h. Methods of inspection, use, cleaning, and storage; and
i. Specific lifelines that may be used. This information should be provided to employees during training.

6. Inspection considerations:

Personal fall arrest systems must be regularly inspected. Any component with any significant defect, such as cuts, tears, abrasions, mold, or undue stretching; alterations or additions which might affect its efficiency; damage due to deterioration; contact with fire, acids, or other corrosives; distorted hooks or faulty hook springs; tongues unfitted to the shoulder of buckles; loose or damaged mountings; nonfunctioning parts; or wearing or internal deterioration in the ropes must be withdrawn from service immediately, and should be tagged or marked as unusable, or destroyed.

FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

Fall Protection System Considerations cont'd

7. Rescue considerations:

When personal fall arrest systems are used, the employer must assure that employees can be promptly rescued or can rescue themselves should a fall occur. The availability of rescue personnel, ladders or other rescue equipment should be evaluated. In some situations, equipment that allows employees to rescue themselves after the fall has been arrested may be desirable, such as devices that have descent capability.

8. Tie-off considerations:

a. One of the most important aspects of personal fall protection systems is fully planning the system before it is put into use. Probably the most overlooked component is planning for suitable anchorage points. Such planning should ideally be done before the structure or building is constructed so that anchorage points can be incorporated during construction for use later for window cleaning or other building maintenance. If properly planned, these anchorage points may be used during construction, as well as afterwards.

b. Employers and employees should at all times be aware that the strength of a personal fall arrest system is based on its being attached to an anchoring system which does not significantly reduce the strength of the system (such as a properly dimensioned eye-bolt/snap-hook anchorage). Therefore, if a means of attachment is used that will reduce the strength of the system, that component should be replaced by a stronger one, but one that will also maintain the appropriate maximum arrest force characteristics.

c. Tie-off using a knot in a rope lanyard or lifeline (at any location) can reduce the lifeline or lanyard strength by 50 percent or more. Therefore, a stronger lanyard or lifeline should be used to compensate for the weakening effect of the knot, or the lanyard length should be reduced (or the tie-off location raised) to minimize free fall distance, or the lanyard or lifeline should be replaced by one which has an appropriately incorporated connector to eliminate the need for a knot.

d. Tie-off of a rope lanyard or lifeline around an "H" or "I" beam or similar support can reduce its strength as much as 70 percent due to the cutting action of the beam edges. Therefore, a webbing lanyard or wire core lifeline should be used around the beam; or the lanyard or lifeline should be protected from the edge; or free fall distance should be greatly minimized.

Fall Protection System Considerations cont'd

e. Tie-off where the line passes over or around rough or sharp surfaces reduces strength drastically. Such a tie-off should be avoided or an alternative tie-off rigging should be used. Such alternatives may include use of a snap-hook/dee-ring connection, wire rope tie-off, an effective padding of the surfaces, or an abrasion-resistance strap around or over the problem surface.

f. Horizontal lifelines may, depending on their geometry and angle of sag, be subjected to greater loads than the impact load imposed by an attached component. When the angle of horizontal lifeline sag is less than 30 degrees, the impact force imparted to the lifeline by an attached lanyard is greatly amplified. For example, with a sag angle of 15 degrees, the force amplification is about 2:1 and at 5 degrees sag, it is about 6:1. Depending on the angle of sag, and the line's elasticity, the strength of the horizontal lifeline and the anchorages to which it is attached should be increased a number of times over that of the lanyard. Extreme care should be taken in considering a horizontal lifeline for multiple tie-offs. The reason for this is that in multiple tie-offs to a horizontal lifeline, if one employee falls, the movement of the falling employee and the horizontal lifeline during arrest of the fall may cause other employees to also fall. Horizontal lifeline and anchorage strength should be increased for each additional employee to be tied-off. For these and other reasons, the design of systems using horizontal lifelines must only be done by qualified persons. Testing of installed lifelines and anchors prior to use is recommended.

g. The strength of an eye-bolt is rated along the axis of the bolt and its strength is greatly reduced if the force is applied at an angle to this axis (in the direction of shear). Also, care should be exercised in selecting the proper diameter of the eye to avoid accidental disengagement of snap-hooks not designed to be compatible for the connection.

h. Due to the significant reduction in the strength of the lifeline/lanyard (in some cases, as much as a 70 percent reduction), the sliding hitch knot should not be used for lifeline/lanyard connections except in emergency situations where no other available system is practical. The "one-and-one" sliding hitch knot should never be used because it is unreliable in stopping a fall. The "two-and-two," or "three-and-three" knot (preferable), may be used in emergency situations; however, care should be taken to limit free fall distance to a minimum because of reduced lifeline/lanyard strength.

9. Vertical lifeline considerations.

As required by the standard, each employee must have a separate lifeline when the lifeline is vertical. The reason for this is that in multiple tie-offs to a single lifeline, if one employee falls, the movement of the lifeline during the arrest of the fall may pull other employees' lanyards, causing them to fall as well.

FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

Fall Protection System Considerations cont'd

10. Snap-hook considerations:

    a. Required by this standard for all connections, locking snap-hooks incorporate a positive locking mechanism in addition to the spring loaded keeper, which will not allow the keeper to open under moderate pressure without someone first releasing the mechanism. Such a feature, properly designed, effectively prevents roll-out from occurring.

    b. The following connections must be avoided (unless properly designed locking snap-hooks are used) because they are conditions which can result in roll-out when a non-locking snap-hook is used:

    - Direct connection of a snap-hook to a horizontal lifeline.
    - Two (or more) snap-hooks connected to one dee-ring.
    - Two snap-hooks connected to each other.
    - A snap-hook connected back on its integral lanyard.
    - A snap-hook connected to a webbing loop or webbing lanyard.
    - Improper dimensions of the dee-ring, rebar, or other connection point in relation to the snap-hook dimensions which would allow the snap-hook keeper to be depressed by a turning motion of the snap-hook.

11. Free fall considerations:

The employer and employee should at all times be aware that a system's maximum arresting force is evaluated under normal use conditions established by the manufacturer, and in no case using a free fall distance in excess of 6 feet (1.8 m). A few extra feet of free fall can significantly increase the arresting force on the employee, possibly to the point of causing injury. Because of this, the free fall distance should be kept at a minimum, and, as required by the standard, in no case greater than 6 feet (1.8 m). To help assure this, the tie-off attachment point to the lifeline or anchor should be located at or above the connection point of the fall arrest equipment to harness. (Since otherwise additional free fall distance is added to the length of the connecting means (i.e. lanyard).) Attaching to the working surface will often result in a free fall greater than 6 feet (1.8 m). For instance, if a 6-foot (1.8 m) lanyard is used, the total free fall distance will be the distance from the working level to the body harness attachment point plus the 6 feet (1.8 m) of lanyard length. Another important consideration is that the arresting force that the fall system must withstand also goes up with greater distances of free fall, possibly exceeding the strength of the system.

FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

Fall Protection System Considerations cont'd

12. Elongation and deceleration distance considerations. Other factors involved in a proper tie-off are elongation and deceleration distance. During the arresting of a fall, a lanyard will experience a length of stretching or elongation, whereas activation of a deceleration device will result in a certain stopping distance. These distances should be available with the lanyard or device's instructions and must be added to the free fall distance to arrive at the total fall distance before an employee is fully stopped. The additional stopping distance may be very significant if the lanyard or deceleration device is attached near or at the end of a long lifeline, which may itself add considerable distance due to its own elongation. As required by the standard, sufficient distance to allow for all of these factors must also be maintained between the employee and obstructions below, to prevent an injury due to impact before the system fully arrests the fall. In addition, a minimum of 12 feet (3.7 m) of lifeline should be allowed below the securing point of a rope grab type deceleration device, and the end terminated to prevent the device from sliding off the lifeline. Alternatively, the lifeline should extend to the ground or the next working level below. These measures are suggested to prevent the worker from inadvertently moving past the end of the lifeline and having the rope grab become disengaged from the lifeline.

13. Obstruction considerations:

    The location of the tie-off should also consider the hazard of obstructions in the potential fall path of the employee. Tie-offs that minimize the possibilities of exaggerated swinging should be considered.

14. Other considerations:

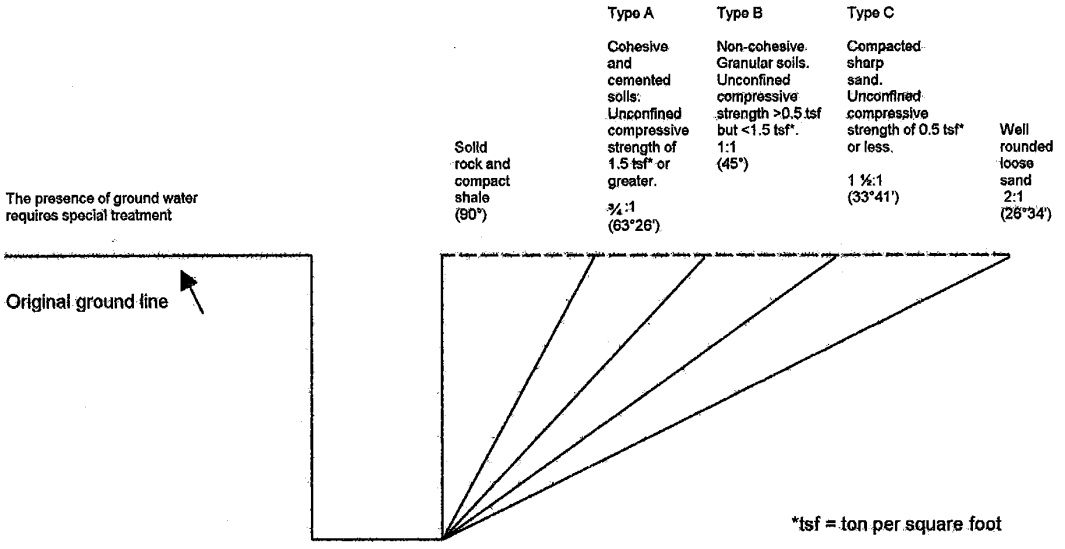
    Because of the design of some personal fall arrest systems, additional considerations may be required for proper tie-off. For example, heavy deceleration devices of the self-retracting type should be secured overhead in order to avoid the weight of the device having to be supported by the employee. Also, if self-retracting equipment is connected to a horizontal lifeline, the sag in the lifeline should be minimized to prevent the device from sliding down the lifeline to a position that creates a swing hazard during fall arrest. In all cases, manufacturer's instructions should be followed.

Trenching and Excavating

1. The determination of the angle of slope and design of the supporting system shall be based on careful evaluation of pertinent factors, such as:

    a. Depth and/or cut/soils classification
    b. Possible variation in water content of the material while excavation is open
    c. Anticipated changes in materials from exposure to air, sun, water, or freezing
    d. Loading imposed by structures, equipment, or overlaying or stored material
    e. Vibration from equipment, blasting, traffic, or other sources

Approximate Angle of Slope
For sloping of sides of excavations



2. Walkways or bridges with standard railings **must be provided** when employees or equipment are required to cross over excavations.

3. The walls and faces of all excavations in which employees are exposed to danger from moving ground **must be guarded** by a shoring system, sloping of the ground, or some other equivalent means.

4. **No person must be permitted** under loads handled by power shovels, derricks, or hoists.

5. **All employees must be protected** with personal protective equipment for the protection of the head, eyes, respiratory system, hands, feet, and other parts of the body.

Motorized Vehicles and Equipment

1. Do not ride on motorized vehicles or equipment unless a proper seat is provided for each rider.

2. Always be seated when riding authorized vehicles (unless they are designed for standing).

3. Do not operate any motorized vehicle or equipment unless you are specifically authorized to do so by your supervisor.

4. Always use your seat belts in the correct manner.

5. Obey all speed limits and other traffic regulations.

6. Always be aware of pedestrians and give them the right-of-way.

7. Always inspect your vehicle or equipment before and after daily use.

8. Never mount or dismount any vehicles or equipment while they are still in motion.

9. Do not dismount any vehicle without first shutting down the engine, setting the parking brake and securing the load.

10. Do not allow other persons to ride the hook or block, dump box, forks, bucket or shovel of any equipment.

11. Each operator must be knowledgeable of all hand signals and obey them.

12. Each operator is responsible for the stability and security of his/her load.

General Materials Handling Safety

General material storage safety:

- Make sure that all materials stored in tiers are stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse.

- Post conspicuously the maximum safe load limits of floors within buildings and structures, in pounds per square foot, in all storage areas, except for floor or slab on grade. Do not exceed the maximum safe loads.

- Keep aisles and passageways clear to provide for the free and safe movement of material handling equipment or employees. Keep these areas in good repair.

- Do not store materials on scaffolds or runways in excess of supplies needed for immediate operations.

- Use ramps, blocking, or grading when a difference in road or working levels exists to ensure the safe movement of vehicles between the two levels.

- Do not place materials stored inside buildings under construction within 6 feet of any hoistway or inside floor openings, or within 10 feet of an exterior wall which does not extend above the top of the material stored.

    (i) Anchor and brace temporary floors used in steel erection, concrete forms, and shoring and other "in-process equipment" that are to be left overnight or for longer periods of time to prevent their displacement in any direction. While in "interim storage," this equipment is subject to the provisions in WAC 296-155-325(2)(i) (see previous bullet point: Do not place materials stored inside buildings under construction within 6 feet of any hoistway or inside floor openings, or within 10 feet of an exterior wall which does not extend above the top of the material stored.)

General Rigging Equipment Safety:

- Inspect rigging equipment for material handling prior to use on each shift and as necessary during its use to ensure that it is safe. Remove defective rigging equipment from service.

- Never load rigging equipment in excess of its recommended safe working load.

- Remove rigging equipment when not in use from the immediate work area so as not to present a hazard to employees.

- Mark special rigging accessories (i.e., spreader bars, grabs, hooks, clamps, etc.) or other lifting accessories with the rated capacity. Proof test all components to 125% of the rated load prior to the first use. Maintain permanent records on the job site for all special rigging accessories.

Disposal of Waste Materials:

- Whenever materials are dropped more than 20 feet to any point lying outside the exterior walls of the building, use an enclosed chute of wood or equivalent material.

- When debris is dropped without the use of chutes, make sure that the area onto which the material is dropped is completely enclosed with barricades at least 42 inches high and 20 feet back from the projected edge of the opening above. Post at each level warning signs of the hazard of falling materials. Do not remove debris in this lower area until debris handling ceases above.

- Remove all scrap lumber, waste material, and rubbish from the immediate work area as the work progresses.

- Make sure to comply with local fire regulations if disposing of waste material or debris by burning.

- Keep all solvent waste, oily rags, and flammable liquids in fire-resistant covered containers until removed from the work site.

Forklift safety

Click on the link below to access basic forklift training. Employees must be trained on specific equipment that they will be operating in addition to this basic information.

Lockout/Tagout of Electrical Circuits

- Controls that are deactivated during the course of work on energized or de-energized equipment or circuits must be tagged and padlocked in the open position.

- Equipment or circuits that are de-energized must be rendered inoperative and have tags and locked padlocks attached at all points where such equipment or circuits can be energized.

- Tags must be placed to identify plainly the equipment or circuits being worked on.

- While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits energizing the parts must be locked out or tagged or both according to the requirements of this section. The requirements must be followed in the order in which they are presented (i.e., (a) of this subsection first, then (b) of this subsection).

(a) Ariel Development, Inc. will maintain a written copy of the procedures outlined in this subsection and shall make it available for inspection by employees and by the director and his/her authorized representative.

(b) De-energizing equipment.

(i) Safe procedures for de-energizing circuits and equipment must be determined before circuits or equipment are de-energized.

(ii) The circuits and equipment to be worked on must be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, must not be used as the sole means for de-energizing circuits or equipment. Interlocks for electric equipment must not be used as a substitute for lockout and tagging procedures.

(iii) Stored electric energy that might endanger personnel must be released. Capacitors must be discharged and high capacitance elements must be short-circuited and grounded, if the stored electric energy might endanger personnel.

(iv) Stored non-electrical energy in devices that could re-energize electric circuit parts must be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.

(c) Application of locks and tags.

(i) A lock and a tag must be placed on each disconnecting means used to deenergize circuits and equipment on which work is to be performed, except as provided in (c)(iii) and (v) of this subsection. The lock must be attached to prevent persons from operating the disconnecting means unless they resort to undue force or the use of tools.

ii) Each tag must contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.

(iii) If a lock cannot be applied, or if the employer can demonstrate that tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.

(iv) A tag used without a lock, as permitted by item (iii) of this subsection, must be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. (Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.)

(v) A lock may be placed without a tag only under the following conditions:

(A) Only one circuit or piece of equipment is de-energized; and

(B) The lockout period does not extend beyond the work shifts; and

(C) Employees exposed to the hazards associated with reenergizing the circuit or equipment are familiar with this procedure.

(d) Verification of de-energized condition. The requirements of this subsection must be met before any circuits or equipment can be considered and worked as de-energized.

(i) A qualified person must operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.

(ii) A qualified person must use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and must verify that the circuit elements and equipment parts are de-energized. The test must also determine if any energized conditions exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been de-energized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment must be checked for proper operation immediately before and immediately after this test.

(e) Reenergizing equipment. These requirements must be met, in the order given, before circuits or equipment are reenergized, even temporarily.

(i) A qualified person must conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.

(ii) Employees exposed to the hazards associated with reenergizing the circuit or equipment must be warned to stay clear of circuits and equipment.

(iii) Each lock and tag must be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the work place, then the lock or tag may be removed by a qualified person designated to perform this task provided that:

(A) The employer ensures that the employee who applied the lock or tag is not available at the work place; and

(B) The employer ensures that the employee is aware that the lock or tag has been removed before he or she resumes work at that work place.

(iv) There must be a visual determination that all employees are clear of the circuits and equipment.

Welding and Cutting Safety Rules

1. Always follow the manufacturer's recommendations for setting up and operating equipment, selection of tip size, and gas cylinder operating pressures.

2. Always use a regulator to reduce gas cylinder pressure to the operating pressures recommended by the equipment manufacturer. All piping and equipment must meet the standards of the Compressed Gas Association.

3. Always ensure that all connections are leak tight. Each time connections are loosened and retightened each connection should be checked with a soap and water solution (oil free soap). Do not check with flame.

4. Before "lighting up" clear out each line by letting a small amount of gas flow (separately) to remove any mixed gases that might be in the lines.

5. Never use defective, worn or leaky equipment. Repair it or take it out of service.

6. Never use acetylene in excess of 15 psi pressure. Higher pressures with acetylene are dangerous. If the cylinder is not fitted with a hand wheel valve control, any special wrench required must be placed on the cylinder while the cylinder is in service. On manifolds, one wrench for each manifold will suffice.

7. Always have an appropriate fire extinguisher in good operating condition readily available when operating welding or cutting equipment.

8. Never perform welding, cutting, brazing, or heating operations in a poorly ventilated area. Avoid breathing fumes from these operations at all times, particularly when zinc, cadmium, or lead coated metals are involved.

9. Never perform welding or cutting operations near combustible materials (gasoline cans, paints, paper, rags, etc.).

10. Always protect yourself, others present, welding hoses, gas cylinders, and flammable materials in the area from hot slag and sparks from the welding and cutting operations.

11. The welder and spectators must always wear goggles to protect the eyes from injurious light rays, sparks and hot molten metal during welding, cutting, and heating operations. Eye protection must comply with the established ANSI Standards.

12. Always wear clean, oil free clothing during welding and cutting operations. Protect the hands with leather welding gloves to avoid burns from radiation and hot molten slag. Low cut shoes and trousers with cuffs or open pockets should not be worn.

13. Never use a match or cigarette lighter to light a cutting or welding torch. Always use a spark igniter. Fingers are easily burned by the igniting gas when a match or cigarette lighter is used.

14. Ensure that the material being welded or cut is secure and will not move or fall on anyone.

15. Never use a welding, cutting, or heating torch on a container that has held a flammable liquid. Explosive vapors can accumulate and linger in closed containers for extended periods of time.

16. Never use a regulator for gasses other than those for which it was designed for by the manufacturer since the diaphragm and seat materials may not be compatible with other gasses.

17. Never attempt to adapt and use a fuel gas or inert gas regulator on an oxygen cylinder. A special protective device is incorporated on the oxygen regulator to harmlessly dissipate the heat caused by the recompression when the cylinder valve is quickly opened. Such a protective device is not furnished on fuel gas and inert gas regulators.

18. Never tamper with the safety devices on cylinders, fuse plugs, safety discs, etc. and do not permit torch flames or sparks to strike the cylinder.

19. Always refer to the various gasses by their proper names. (Do not refer to oxygen as "air" or acetylene as "gas".)

20. All cylinders, particularly acetylene, should be restrained securely in an upright position to prevent accidents. A non-vertical position for an acetylene cylinder in use would allow the discharge of acetone through the regulator and into the cutting torch, clogging the mixer passages and creating a fire hazard. It would reduce the efficiency of the flame and contaminate the weld area. It also can cause voids in the porous material inside the cylinder, which can lead to acetylene explosions.

21. Store all gas cylinders not in use away from excessive heat sources, such as stoves, furnaces, radiators, the direct rays of the sun, and the presence of open flames. Cylinders in storage should always be secured in an upright position.

22. Keep all burning or flammable substances away from the oxygen or fuel gas storage area (at least 20 feet) and post "No Smoking" signs.

23. Upon completion of a welding, heating, or cutting operation immediately inspect the surrounding areas for smoldering embers. Allow at least one half hour to elapse before leaving the area and conduct another thorough inspection just before leaving. Also alert other personnel of fire possibilities.

24. Always have the properly fitted wrench to fasten a regulator to a cylinder. Never tighten the regulator by hand.

25. Always leave the fuel gas cylinder valve wrench in place when the cylinder valve is open so that it can be closed quickly in an emergency. Do not open acetylene valves more than one-quarter (1/4) turn.

26. Before connecting a regulator to a gas cylinder, open the cylinder valve for a moment. Called cracking the cylinder valve, this will blow out any foreign material that may have lodged in the valve during transit. Do not stand in front of the valve when "cracking".

27. After attaching a regulator to a gas cylinder, be sure the regulator adjusting screw is fully released (backed off in a counter clockwise direction so that it swivels freely) before the cylinder valve is opened. Never stand in front of a regulator when you are opening a cylinder valve.

28. Always open the cylinder valve slowly so that gas pressure will build up slowly in the regulator (particularly in the oxygen cylinder). Quick opening of the cylinder valve causes a build up of heat due to recompression of the gas. When combined with combustible materials, ignition and explosion may result.

29. If a leak develops in a fuel gas cylinder that cannot be stopped by closing the valve, immediately place the cylinder outside of the building away from possible fire or ignition sources in a location that is free from wind currents that might carry the gas to an ignition source.

30. Never attempt to mix gasses in a cylinder or fill an empty one from another (particularly oxygen cylinders). Mixture of incompatible gasses and/or heat caused by recompression of the gas or gasses may result in ignition and fire. Only the owner of a cylinder may mix gasses in it.

31. When a gas cylinder is ready for return to the supplier, be certain the cylinder valve is closed to prevent internal contamination and the shipping cap is in place to protect the cylinder valve. Identify empty cylinders.

32. Never use oxygen or other gasses as a substitute for compressed air in operation of air-operated tools, blowing off parts, or for ventilation purposes. The only exception to this rule is where oxygen is used to blow out port passages and talcum powder or dust from welding hoses when setting up new or old "dusty" equipment.

33. Do not attempt to do your own repair on welding equipment. Equipment that is improperly repaired can cause leaks and other hazardous conditions. Repairs must be performed by qualified repair personnel.

34. Never repair welding hose with tape. Use of tape and many hose splicers can reduce the pressure to the torch and can cause hazardous conditions. Welding hose must meet the specifications of the Compressed Gas Association.

35. Use the shortest length of hose possible. Longer hoses require higher gas pressures and can be hard to handle.

36. Never use oil or grease on any part of welding or cutting equipment and never let it come into contact with oil or grease. This includes gas cylinders, work bench, regulators, torches, tips, threads on bottles, and clothes that are worn, such as jackets, gloves, and aprons. Oxygen and oil or grease can cause explosions and fire.

37. Never use a hammer on the valve cover caps to loosen them. Use a piece of wood to soften the impact and prevent sparks and damage to the cap.

38. When moving gas cylinders always roll them on their bottom edges or in a cart designed for their movement. Sliding or dragging them or rolling causes excessive wear and may weaken their walls by metal erosion. Slings and electromagnets are not authorized when transporting cylinders.

39. Never use cylinders as rollers to move material. Do not let them bump into each other or let them fall.

40. Fuel gas and liquefied fuels must be stored and shipped valve end up.

41. Do not hammer on any cylinder. Do not tamper with the relief valves. If you have trouble, contact the supplier for assistance.

42. Suitable eye protection must be worn for all welding and cutting operations.

43. Cylinders must be secured. Valves must be closed when unattended and caps must be on the cylinders when the regulators are not on the cylinders.

44. Cylinders must be upright when they are transported in powered vehicles.

45. All cylinders with a water weight of over 30 lbs. must have caps or other protection.

46. All fuel gases must be used through a regulator on cylinder or manifold.

47. Compressed gas cylinders must be upright except for short periods for transportation.

48. Repair work on gauges and regulators must be done by qualified personnel.

49. Only 4 inches of hose per foot may be covered with tape. Defective hoses must be removed from service.

50. Oxygen must not be used for ventilation.

51. Oxygen regulators must be marked "Use No Oil". Regulators and fittings must meet the specifications of the Compressed Gas Association.

52. Union nuts on regulators must be checked for damage.

53. Before removing a regulator, shut off cylinder valve and release gas from regulator. Equipment must be used only as approved by the manufacturer.

54. Caps must be on cylinders unless they are transported on a special carrier.

55. Hot warnings on materials are required.

56. Fire is the biggest hazard in welding. The area should be cleared for a radius of 35 feet. Fire shields should be used. The area should be monitored for 30 minutes or more after end of work to ensure there is no delayed ignition.

57. Proper personal protective equipment must be worn by all welders and assisting personnel.

58. All welding personnel should be advised of the hazards from heating zinc, lead, cadmium, and any other substances that could cause health problems from the welding activity.

(The following apply to arc welding)

59. Chains, wire ropes, hoists, and elevators must not be used to carry welding current.

60. Leather capes should be used for overhead welding.

61. The neck and ears must be protected from the arc.

62. Conduits with electrical conductors in them must not be used to complete a welding circuit.

63. Welding shields must be used to protect other workers from injurious light rays.

64. Welding leads must be inspected regularly for damage to insulation. Only proper splicing will be authorized. There should be no splices in stinger lead within 10 feet of the stinger and the leads should never be wrapped around the body.

Hazard Communication Program

Purpose:

The purpose of the Hazard Communication Program is to ensure that the hazards of all chemicals produced or imported by chemical manufacturers or importers are evaluated. Information concerning the hazards must be transmitted to affected employers and employees before they use the products.

Procedure:

- Inventory Lists – Know the hazardous chemicals in your workplace that are a potential physical or health hazard. Make an inventory list of these hazardous chemicals; this list must be a part of your written program.

- MSDS – Make sure there is a material safety data sheet (MSDS) for each chemical and that the inventory list and labeling system reference the corresponding MSDS for each chemical.

- Labeling System – Each container entering the workplace must be properly labeled with the identity of the product, the hazardous warning, and the name and address of the manufacturer.

- Written Program – Develop, implement, and maintain a comprehensive written hazard communication program at the workplace that includes provisions for container labeling, material safety data sheets, and an employee training

Employees must be made aware of where hazardous chemicals are used in their work areas. They must also be informed of the requirements of the Hazard Communication Standard, the availability and location of the written program, the list of hazardous chemicals, and the material safety data sheets.

The code specifically requires employers to train employees in the protective practices implemented in their workplace, the labeling system used, how to obtain and use MSDSs, the physical and health hazards of the chemicals and the recognition, avoidance and prevention of accidental entrance of hazardous chemicals into the work environment.

Respirator Program

Refer to Respiratory Protection Program

Hearing Conservation Program

Purpose:

The purpose of the Hearing Conservation Program is to ensure that all employees are protected from exposure to noise hazards. Employers whose workers are exposed to high noise levels must have an active program for protecting their employees' hearing.

Procedure:

An effective hearing conservation program should first assess company wide noise exposures in order to identify any employee or group of employees exposed to noise. Noise is measured with a sound level meter or noise dosimeters, which measure average noise levels over time. Employees who are exposed to noise at or above an eight-hour time-weighted average of 85 dB (decibels) must be covered under a hearing conservation program. For these employees, the employer must develop, implement, and maintain (at no cost to the employees) a program consisting of

1. Mandatory audiometric testing
2. Making hearing protectors available and ensuring their use.
3. Comprehensive training explaining hearing loss, hearing protective devices, and the employer's hearing conservation program.
4. Installation of warning signs for high noise areas (115 dBA or higher).
5. Keeping accurate records.
6. Ensuring employee access to their records.

Additionally, the employer must post a copy of the hearing conservation standard or post a notice to affected employees or their representatives that a copy of the standard is available at the workplace for their review.

If you need assistance in noise measurements, you can contact the Consultation Section of the Department of Labor and Industries; the industrial hygiene consultants can help you free of charge.

CONFINED SPACES

Fatalities and injuries constantly occur among construction workers who, during the course of their jobs, are required to enter confined spaces. In some circumstances, these workers are exposed to multiple hazards, any of which may cause bodily injury, illness, or death. Workers are injured and killed from a variety of atmospheric factors and physical agents.

The construction standard (WAC 296-155-203) requires that companies follow WAC 296-62, Part M when working in confined spaces. There is an exception for work on sewer systems under construction.

Employers must consult with employees and their authorized representatives on the development and implementation of all aspects of the permit required confined space entry program required by the Confined Space Standard, (WAC 296-62, Part M).

All information required by the Confined Space Standard must be available to employees affected by the standard (or their authorized representatives).

You must first determine if you have any confined space situations. A confined space has three characteristics; it must have **all three** characteristics to be considered a confined space:

1. Large enough to get your body entirely inside to do your work
2. Not designed or intended for continuous occupation
3. Restricted entry or exit

If you do have any confined spaces, you must not enter them until you have carefully evaluated the hazards inside to determine what type of entry procedure may be used for each confined space you have:

- Non-permit-required confined space (NPRCS)
- Permit-required confined space (PRCS)
- Alternate Entry

APPENDIX

Job Orientation Guide

Company: *Ariel Development, Inc.* Employee:
Trainer: Hire Date:
Date Position:

This checklist is a guideline for conducting employee safety orientations for employees new to *(Customize by adding the name of your company)*. Once completed and signed by both supervisor and employee, it serves as documentation that orientation has taken place.

		Date	Initials
1.	Explain the company safety program, including:		
	Orientation	_____	_____
	On-the-job training	_____	_____
	Safety meetings	_____	_____
	Incident investigation	_____	_____
	Disciplinary action	_____	_____
2.	Use and care of personal protective equipment (Hard hat, fall protection, eye protection, etc.)	_____	_____
3.	Line of communication and responsibility for immediately reporting injuries.		
	A. When to report an injury	_____	_____
	B. How to report an injury	_____	_____
	C. Who to report an injury to	_____	_____
	D. Filling out incident report forms	_____	_____
4.	General overview of operation, procedures, methods and hazards as they relate to the specific job	_____	_____
5.	Pertinent safety rules of the company and WISHA	_____	_____
6.	First aid supplies, equipment and training		
	A. Obtaining treatment	_____	_____
	B. Location of Facilities	_____	_____
	C. Location and names of First-aid trained personnel	_____	_____
7.	Emergency plan		
	A. Exit location and evacuation routes	_____	_____
	B. Use of fire fighting equipment (extinguishers, hose)	_____	_____
	C. Specific procedures (medical, chemical, etc.)	_____	_____
8.	Vehicle safety	_____	_____
9.	Personal work habits		
	A. Serious consequences of horseplay	_____	_____
	B. Fighting	_____	_____
	C. Inattention	_____	_____
	D. Smoking policy	_____	_____
	E. Good housekeeping practices	_____	_____
	F. Proper lifting techniques	_____	_____

NOTE TO EMPLOYEES: Do not sign unless ALL items are covered and ALL questions are satisfactorily answered.

The signatures below document that the appropriate elements have been discussed to the satisfaction of both parties, and that both the supervisor and the employee accept responsibility for maintaining a safe and healthful work environment.

Date: _____ Supervisor's Signature: _____

Date: _____ Employee's Signature: _____

Employee's Report of Injury Form

Instructions: Your employees may use this form to report all work related injuries, illnesses, or "near miss" events (which could have caused an injury or illness) – *no matter how minor.* This helps you to identify and correct hazards before they cause serious injuries. This form should be completed by employees as soon as possible and given to a supervisor for further action.

I am reporting a work related: ❑ Injury ❑ Illness ❑ Near miss	
Your Name:	
Job title:	
Supervisor:	
Have you told your supervisor about this injury/near miss? ❑ Yes ❑ No	
Date of injury/near miss:	Time of injury/near miss:
Names of witnesses (if any):	
Where, exactly, did it happen?	
What were you doing at the time?	
Describe step by step what led up to the injury/near miss. (continue on the back if necessary):	
What could have been done to prevent this injury/near miss?	
What parts of your body were injured? If a near miss, how could you have been hurt?	
Did you see a doctor about this injury/illness? ❑ Yes ❑ No	
If yes, whom did you see?	Doctor's phone number:
Date:	Time:
Has this part of your body been injured before? ❑ Yes ❑ No	
If yes, when?	Employer:
Your signature (optional):	Date:

Incident Investigation Report

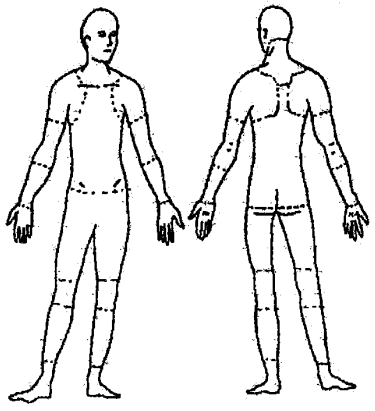
Instructions: Complete this form as soon as possible after an incident that results in serious injury or illness. (Optional: Use to investigate a minor injury or near miss that *could have resulted in a serious injury or illness.*)

This is a report of a: ❑ Death ❑ Lost Time ❑ Dr. Visit Only ❑ First Aid Only ❑ Near Miss	
Date of incident:	This report is made by: ❑ Employee ❑ Supervisor ❑ Team ❑ Final Report

Step 1: Injured employee (complete this part for each injured employee)

Name:	Sex: ❑ Male ❑ Female	Age:
Department:	Job title at time of incident:	

Part of body affected: (shade all that apply)



Nature of injury: (most serious one)

- ❑ Abrasion, scrapes
- ❑ Amputation
- ❑ Broken bone
- ❑ Bruise
- ❑ Burn (heat)
- ❑ Burn (chemical)
- ❑ Concussion (to the head)
- ❑ Crushing Injury
- ❑ Cut, laceration, puncture
- ❑ Hernia
- ❑ Illness
- ❑ Sprain, strain
- ❑ Damage to a body system:
- ❑ Other _____

This employee works:

- ❑ Regular full time
- ❑ Regular part time
- ❑ Seasonal
- ❑ Temporary

Months with this employer

Months doing this job:

(e.g.: nervous, respiratory, or circulatory systems)

Step 2: Describe the incident

Exact location of the incident:	Exact time:

What part of employee's workday? ❑ Entering or leaving work ❑ Doing normal work activities ❑ During meal period ❑ During break ❑ Working overtime ❑ Other

Names of witnesses (if any):

Number of attachments:	Written witness statements:	Photographs:	Maps / drawings:

What personal protective equipment was being used (if any)?

Describe, step-by-step the events that led up to the injury. Include names of any machines, parts, objects, tools, materials and other important details.

Description continued on attached sheets: ❑

Step 3: Why did the incident happen?

Unsafe workplace conditions: (Check all that apply)	Unsafe acts by people: (Check all that apply)
❑ Inadequate guard	❑ Operating without permission
❑ Unguarded hazard	❑ Operating at unsafe speed
❑ Safety device is defective	❑ Servicing equipment that has power to it
❑ Tool or equipment defective	❑ Making a safety device inoperative
❑ Workstation layout is hazardous	❑ Using defective equipment
❑ Unsafe lighting	❑ Using equipment in an unapproved way
❑ Unsafe ventilation	❑ Unsafe lifting by hand
❑ Lack of needed personal protective equipment	❑ Taking an unsafe position or posture
❑ Lack of appropriate equipment / tools	❑ Distraction, teasing, horseplay
❑ Unsafe clothing	❑ Failure to wear personal protective equipment
❑ No training or insufficient training	❑ Failure to use the available equipment / tools
❑ Other: _____	❑ Other: _____

Why did the unsafe conditions exist?

Why did the unsafe acts occur?

Is there a reward (such as "the job can be done more quickly", or "the product is less likely to be damaged") that may have encouraged the unsafe conditions or acts? ❑ Yes ❑ No
If yes, describe:

Were the unsafe acts or conditions reported prior to the incident? ❑ Yes ❑ No

Have there been similar incidents or near misses prior to this one? ❑ Yes ❑ No

Step 4: How can future incidents be prevented?
What changes do you suggest to prevent this injury/near miss from happening again? ❑ Stop this activity ❑ Guard the hazard ❑ Train the employee(s) ❑ Train the supervisor(s) ❑ Redesign task steps ❑ Redesign work station ❑ Write a new policy/rule ❑ Enforce existing policy ❑ Routinely inspect for the hazard ❑ Personal Protective Equipment ❑ Other: _____
What should be (or has been) done to carry out the suggestion(s) checked above? Description continued on attached sheets: ❑

Step 5: Who completed and reviewed this form? (Please Print)	
Written by: Department:	Title: Date:
Names of investigation team members:	
Reviewed by:	Title: Date:

SAFETY MEETING NOTICE

DATE: _____

TIME: _____

PLACE:

_____

_____

FALL PROTECTION – Refer to Fall protection Plan

JOB SAFETY ANALYSIS WORKSHEET

TITLE OF JOB OPERATION: _____ Date: _____

Title of person who does job: _____

Employee observed: _____ Location: _____

Analysis made by: _____ Analysis approved by: _____

Sequence of basic job steps	Potential injuries or hazards	Recommended safe job procedures

Personal protective equipment required for this position:

Written Hazard Communication Program – Refer To General Safety program